

stray capacitance between the connecting yVcom lines and the sense regions according to embodiments of the invention.

[0024] FIG. 11 illustrates a patterning of a first metal layer (M1) of pixels in an example electrically controlled birefringence (ECB) LCD display using amorphous silicon (a-Si) according to embodiments of the invention.

[0025] FIG. 12 illustrates a patterning step in which island patterns of poly-Si are formed in the example ECB LCD display using a-Si according to embodiments of the invention.

[0026] FIG. 13 illustrates connections formed in a pixel in the example ECB LCD display using a-Si according to embodiments of the invention.

[0027] FIG. 14 illustrates patterning of a second metal layer (M2) of pixels in the example ECB LCD display using a-Si according to embodiments of the invention.

[0028] FIG. 15 illustrates planarization (PLN) contact layers in the example ECB LCD display using a-Si according to embodiments of the invention.

[0029] FIG. 16 illustrates reflector (REF) layers in the example ECB LCD display using a-Si according to embodiments of the invention.

[0030] FIG. 17 illustrates passivation (PASS) contacts in the example ECB LCD display using a-Si according to embodiments of the invention.

[0031] FIG. 18 illustrates semi-transparent conductive material, such as IPO, layers that form pixel electrodes in the example ECB LCD display using a-Si according to embodiments of the invention.

[0032] FIG. 19 illustrates a plan view of completed pixels in the example ECB LCD display using a-Si according to embodiments of the invention.

[0033] FIGS. 20A-D illustrate side views of completed pixels in the example ECB LCD display using a-Si according to embodiments of the invention.

[0034] FIGS. 21 and 22 illustrate a comparative analysis of the storage capacitances of pixels in the example ECB LCD display using a-Si according to embodiments of the invention.

[0035] FIG. 23 illustrates aperture ratio estimations for pixels in the example ECB LCD display using a-Si according to embodiments of the invention.

[0036] FIG. 24 illustrates an example modification in the example ECB LCD display using a-Si according to embodiments of the invention.

[0037] FIG. 25 illustrates the patterning of a layer of poly-Si of pixels in an example in-plane switching (IPS) LCD display using low temperature polycrystalline silicon (LTPS) according to embodiments of the invention.

[0038] FIG. 26 illustrates the patterning of a first metal layer (M1) of pixels in the example IPS LCD display using LTPS according to embodiments of the invention.

[0039] FIG. 27 illustrates vias formed in pixels in the example IPS LCD display using LTPS according to embodiments of the invention.

[0040] FIG. 28 illustrates the patterning of a second metal layer (M2) of pixels in the example IPS LCD display using LTPS according to embodiments of the invention.

[0041] FIG. 29 illustrates a first layer of transparent conductive material, such as ITO, formed on pixels in the example IPS LCD display using LTPS according to embodiments of the invention.

[0042] FIG. 30 illustrates a connection in the example IPS LCD display using LTPS according to embodiments of the invention.

[0043] FIG. 31 illustrates a second layer of transparent conductor, such as ITO, formed on pixel in the example IPS LCD display using LTPS according to embodiments of the invention.

[0044] FIG. 32 illustrates a plan view of completed pixels in the example IPS LCD display using LTPS according to embodiments of the invention.

[0045] FIG. 33 illustrates a side view of a pixel in the example IPS LCD display using LTPS according to embodiments of the invention.

[0046] FIG. 34 illustrates the storage capacitances of two pixels in the example IPS LCD display using LTPS according to embodiments of the invention.

[0047] FIG. 35 illustrates the patterning of a layer of poly-Si of pixels in an example IPS LCD display using LTPS in which a yVcom line is formed in an M2 layer according to embodiments of the invention.

[0048] FIG. 36 illustrates the patterning of a first metal layer (M1) of pixels in the example IPS LCD display using LTPS in which a yVcom line is formed in an M2 layer according to embodiments of the invention.

[0049] FIG. 37 illustrates vias formed in pixels in the example IPS LCD display using LTPS in which a yVcom line is formed in an M2 layer according to embodiments of the invention.

[0050] FIG. 38 illustrates patterning of a second metal layer (M2) of pixels in the example IPS LCD display using LTPS in which a yVcom line is formed in an M2 layer according to embodiments of the invention.

[0051] FIG. 39 illustrates a first layer of transparent conductive material, such as ITO, formed on pixels in the example IPS LCD display using LTPS in which a yVcom line is formed in an M2 layer according to embodiments of the invention.

[0052] FIG. 40 illustrates connections in the example IPS LCD display using LTPS in which a yVcom line is formed in an M2 layer according to embodiments of the invention.

[0053] FIG. 41 illustrates a second layer of transparent conductor, such as ITO, formed on pixels in the example IPS LCD display using LTPS in which a yVcom line is formed in an M2 layer according to embodiments of the invention.

[0054] FIG. 42 illustrates a plan view of completed pixels in the example IPS LCD display using LTPS in which a yVcom line is formed in an M2 layer according to embodiments of the invention.

[0055] FIG. 43 illustrates a side view of a pixel in the example IPS LCD display using LTPS in which a yVcom line is formed in an M2 layer according to embodiments of the invention.

[0056] FIG. 44 illustrates a semiconductor layer of poly-Si in an example ECB LCD display using LTPS according to embodiments of the invention.

[0057] FIG. 45 illustrates a first layer of metal (M1) in the example ECB LCD display using LTPS according to embodiments of the invention.

[0058] FIG. 46 illustrates connections in the example ECB LCD display using LTPS according to embodiments of the invention.

[0059] FIG. 47 illustrates a second metal layer (M2) in the example ECB LCD display using LTPS according to embodiments of the invention.

[0060] FIG. 48 illustrates a connection layer in the example ECB LCD display using LTPS according to embodiments of the invention.